Oct. 23, 1951 J. G. ALLEMANN 2,571,996

BOTTOM MARGIN INDICATOR FOR TYPEWRITERS

Filed Dec. 30, 1949 2 SHEETS—SHEET 1

FIG. 1

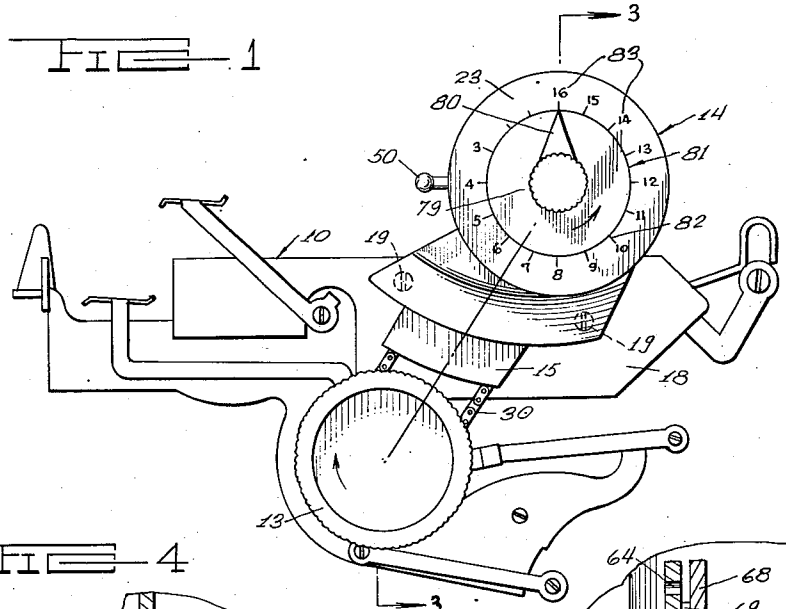


FIG. 4

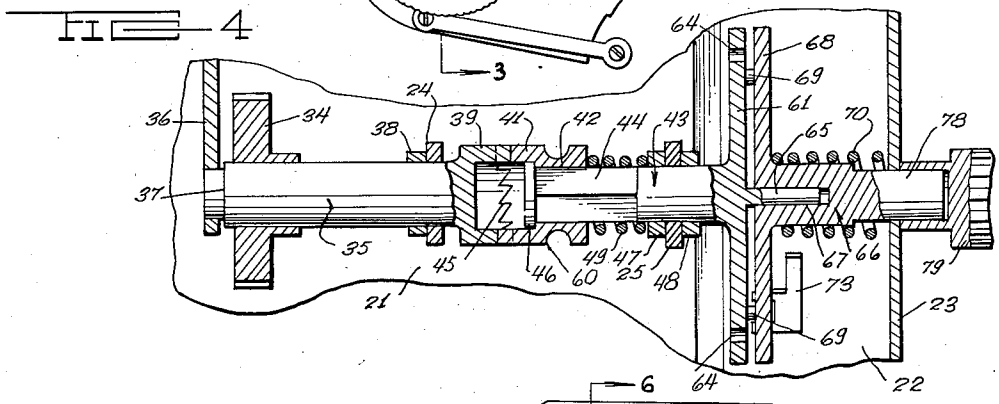
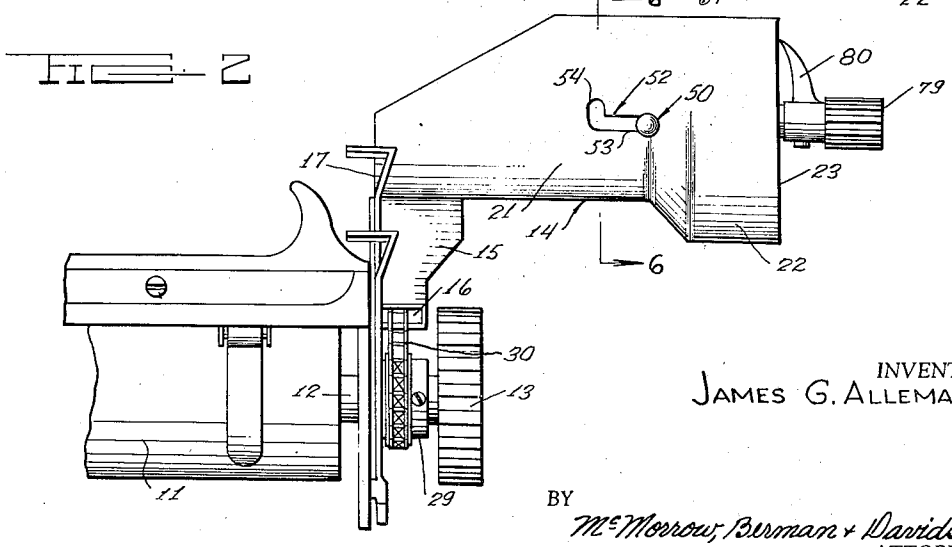


FIG. 2



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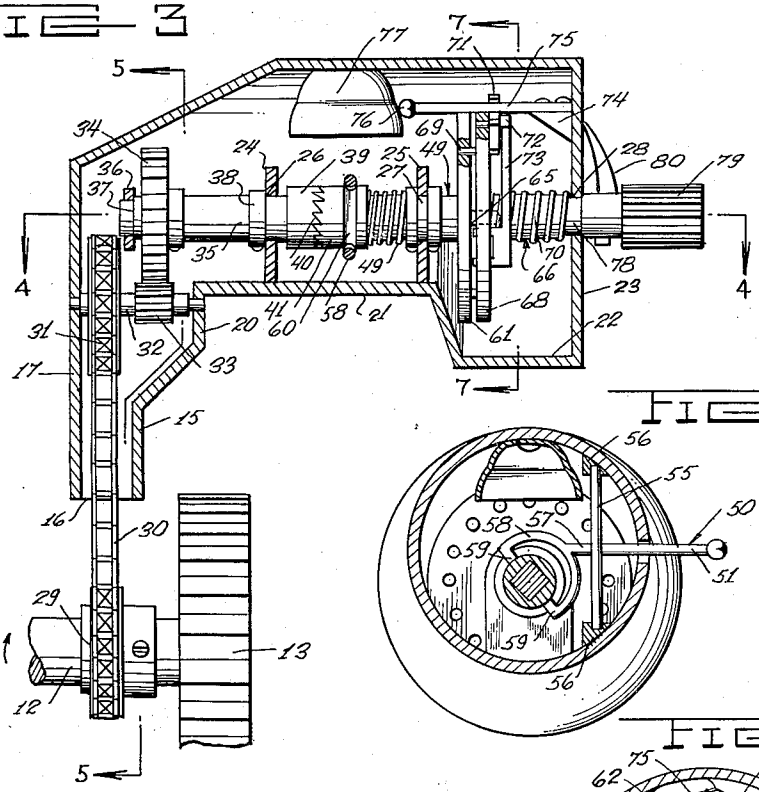
BY
McMorrow, Berman & Davidson
ATTORNEYS

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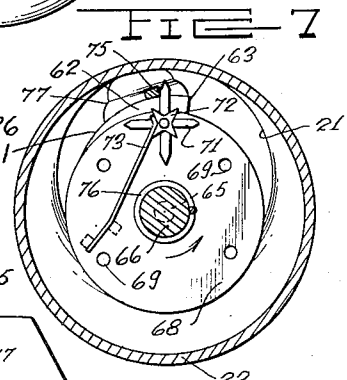
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FIG—3

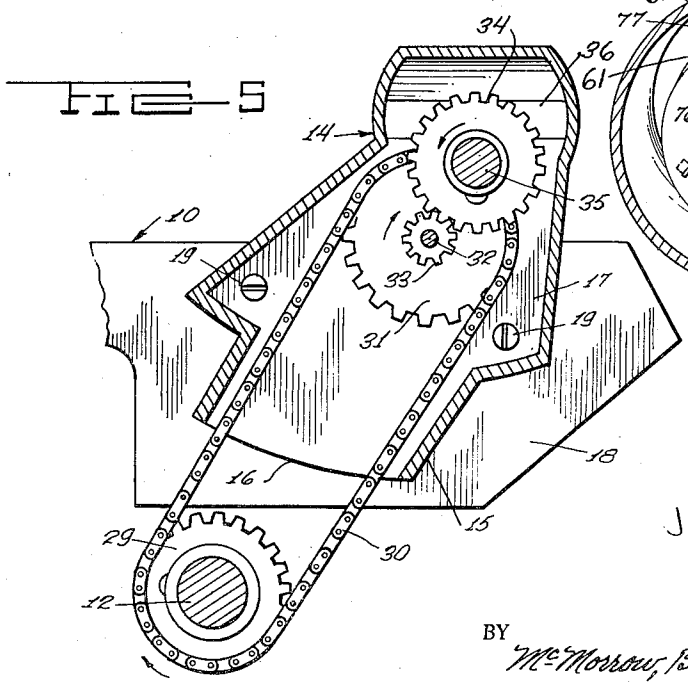


FIG—6

FIG—7



FIG—5



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Patented Oct. 23, 1951

2,571,996

UNITED STATES PATENT OFFICE

2,571,996

BOTTOM MARGIN INDICATOR FOR TYPEWRITERS

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Application December 30, 1949, Serial No. 136,093

3 Claims. (Cl. 197—189)

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My invention relates to a bottom margin indicating device for typewriters.

A primary object of the invention is to provide a bottom margin indicator for typewriters which will give an audible signal when the typist reaches a previously determined point above the bottom of the sheet of paper for leaving the desired bottom margin.

A further object is to provide a bottom margin indicator which is adjustable for indicating the bottom margin for various lengths of sheets of paper.

A further object is to provide a bottom margin indicator in the form of a simplified and highly compact attachment to be mounted bodily upon the carriage of a conventional typewriter, and operatively connected with the platen or roller of the typewriter.

A still further object is to provide a device of the above-mentioned character which is sturdy and durable, easy to manipulate, and relatively inexpensive to manufacture.

Other objects and advantages of the invention will be apparent during the course of the following description.

In the accompanying drawings forming a part of this application, and in which like numerals are employed to designate like parts throughout the same:

Figure 1 is a side elevation of a bottom margin indicating device embodying my invention and showing the same mounted upon one end of the carriage of a conventional typewriter;

Figure 2 is a front side elevation of the device illustrated in Figure 1;

Figure 3 is a central vertical longitudinal section taken on line 3—3 of Figure 1;

Figure 4 is an enlarged horizontal section taken on line 4—4 of Figure 3;

Figure 5 is a transverse vertical section taken on line 5—5 of Figure 3;

Figure 6 is a similar section taken on line 6—6 of Figure 2;

Figure 7 is a similar section taken on line 7—7 of Figure 3.

In the drawings, where, for the purpose of illustration, is shown a preferred embodiment of my invention, the numeral 10 designates generally the horizontally and longitudinally shiftable carriage of a conventional typewriter, such as an Underwood standard typewriter. This carriage 10 includes the usual horizontal, rotatable platen or roller 11 having a shaft extension 12 projecting beyond the end of the roller 11 and carrying a knob 13 for turning the roller.

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I provide a combined support and casing for my bottom margin indicating device, designated generally by the numeral 14 and comprising a generally vertically disposed inner tubular end portion 15, having its bottom open, as shown at 16. The inner end portion 15 is preferably rectangular in transverse cross-section, Figure 2, and includes an inner, flat, vertical side 17 for engagement against the adjacent vertical end 18 of the typewriter carriage 10. The side 17 is rigidly secured to the end 18 by screws 19 or the like. As shown in Figure 1, the tubular end portion 15 is arranged at an inclination with respect to the vertical and extends radially of the roller 11 and knob 13. The bottom open end 16 is arranged between the end 18 of the carriage and knob 13 of the roller, and adjacent to and spaced from the shaft extension 12. Near its upper end, the tubular end portion 15 is enlarged, forming a laterally outwardly offset flange or side 20. Secured to the top of the inner, tubular end portion 15, and preferably formed integrally therewith, is an elongated, horizontally disposed, generally cylindrical, hollow body portion or casing section 21 extending longitudinally outwardly of the portion 15 and knob 13, Figure 2. The casing section 21 extends axially of and parallel to the axis of the roller 11, and has an enlarged outer end portion or casing section 22 integral therewith and including a vertically disposed end wall 23.

Rigidly secured to the bottom of the casing section 21 by welding or the like, and arranged near the longitudinal center of the combined casing and support 14 are a pair of upstanding, longitudinally spaced bearing plates 24 and 25 having aligned horizontal bores 26 and 27 arranged in axial alignment with a bore or opening 28 formed in the outer vertical end 23.

Mounted upon the shaft extension 12 for rotation therewith is a first sprocket wheel 29 receiving thereon a vertically extending sprocket chain 30 having its upper end trained over a second sprocket wheel 31 secured to a short horizontal, rotatable shaft 32, having its opposite ends journaled within the side 13 and flange 20, respectively, Figure 3. The first and second sprocket wheels 29 and 31 are arranged in radial alignment, and the sprocket chain 30 extends at an inclination to the vertical, Figure 1, and operates within the tubular end portion 15 of the combined casing and support 14. Mounted upon the short shaft 32 for rotation therewith and disposed axially outwardly and near the second sprocket wheel 31 is a small reduction gear 33

meshing with a larger driven gear 34, secured to a longitudinally extending, horizontal, inner shaft section 35 for rotation therewith. The gear 34 is disposed axially outwardly of the sprocket wheel 31, as shown. The inner end of the shaft section 35 is journaled within a transversely extending bearing plate 36 rigidly secured to the opposite sides of the casing section 21 and the outer end of the shaft section 35 is journaled within the bore 26 of the bearing plate 24. The shaft section 35 has an inner end shoulder 37, which engages the adjacent side of the bearing plate 36 to prevent inward longitudinal movement of the shaft section 35, and near its outer end, the shaft section 35 carries a fixed stop collar or ring 38 engaging the bearing plate 24 to prevent longitudinal or axial movement of the shaft section 35 in the opposite direction. Rigidly secured to the outer end of the shaft section 35 and disposed longitudinally outwardly of the bearing plate 24 is a first clutch element or head 39 having its outer end provided with an annular group of axially extending teeth 40, each tooth having a side inclined in the same direction as the corresponding of the next adjacent tooth 40, Figure 3.

A companion, axially shiftable clutch head or sleeve 41 having a square bore 42 is mounted upon an intermediate shaft section 43 having a square inner end extension 44 slidably receiving the clutch head 41 thereon. The clutch head 41 has teeth 45 which mesh with the teeth 40 of the clutch head 39, as shown. The inclination of the sides of the teeth 40 and 45 is such that the clutch head 41 may rotate relative to the clutch head 39 when the intermediate shaft section 43 is turned counterclockwise, Figures 1 and 3. When the intermediate shaft section 43 is turned clockwise, the clutch heads 39 and 41 positively engage and there is no relative rotation between them. The inner end of the intermediate shaft section 43 is provided with a flat head 46 forming a shoulder to prevent the clutch head 41 from shifting axially to the left, Figure 4. The intermediate shaft section 43 is journaled within the opening or bore 27 of the bearing plate 25, and thrust collars or rings 47 and 48 are secured to the shaft section 43 for rotation therewith and disposed upon opposite sides of the bearing plate 25 for slidably engaging the opposite sides of the bearing plate. An expansible coil spring 49 has one end engaging the clutch head 41, and its opposite end engaging the collar 47, and this spring serves to maintain the clutch head 41 normally in engagement with the clutch head 39.

A manually-operated clutch disengaging lever 50 is provided, and this lever comprises a straight, forwardly extending, horizontal handle or shank 51, operating in a forward L-shaped slot 52 formed in the forward side of the intermediate casing section 21, Figure 2, and including an elongated, horizontally disposed section or leg 53 and a vertically upwardly extending, locking section 54. Inwardly of the forward side of the casing section 21 and inwardly of the slot 52, the lever 50 carries a transverse, vertically extending rod 55 rigidly secured to the handle 51 and forming trunnions journaled within bearings 56 rigidly secured to the inner surface of the casing section 21 near the top and bottom thereof. Inwardly of the rod 55, the lever 50 further comprises a short, horizontal, inwardly extending section 57 having rigidly secured to its inner end a substantially semicircular yoke 58 having inwardly projecting, radial extensions or arms 59 arranged at diametrically opposite points and engaging in an annular groove 60 formed in the periphery of the clutch head 41. The lever 50 may be pivoted upon the trunnions formed by the rod 50 for shifting the clutch head 41 axially upon the squared extension 44 of the intermediate shaft section 43 in opposition to the spring 49. The spring 49 normally biases the clutch head 41 to the left, Figures 3 and 4, and into positive engagement with the clutch head 39. The handle 51 is thus normally biased toward the right-hand end of the slot section 53, Figure 2, by the spring 49. When it is desired to disengage the clutch head 41 from the clutch head 39, the handle 51 of the lever is shifted to the left, Figure 2, and engaged within the locking section 54 of the L-shaped slot 52. While the handle 51 is in the portion 54 of the L-shaped slot, the clutch head 41 will be maintained disengaged from the clutch head 39.

The intermediate shaft section 43 extends longitudinally beyond the collar 48 for a short distance, Figure 4, and has secured to its outer end a vertically disposed, substantially circular, flat cam disc 61 disposed near and inwardly of the outer end 23 of the combined support and casing 14. The cam disc 61 is provided upon its periphery with a radially projecting, curved, circumferentially elongated, tapered cam section 62 terminating at one end in an abrupt, radial step or shoulder 63, the opposite end of the cam section 62 blending smoothly into the periphery of the cam disc 61. The cam disc 61 is further provided with sixteen circumferentially spaced openings 64, the openings 64 being preferably arranged substantially 22½° apart, and spaced radially equidistantly from the center of the cam disc 61 and intermediate shaft section 43. The shaft section 43 terminates at its outer end in a reduced, axial extension or nose 65.

Rotatably mounted within the bore 28 of the outer end 23 is an outer shaft section 66 disposed in axial alignment with the shaft sections 35 and 43. At its inner end, the outer shaft section 66 has an axial opening or bore 67 rotatably receiving therein the nose 65. Adjacent to its inner end, the shaft section 66 is provided with a flat, circular, radially extending, combined stop and selector disc 68 rigidly secured to the shaft section 66 and preferably formed integrally therewith. The disc 68 carries axially inwardly extending pins or dowels 69 arranged in pairs 45° apart for engagement within the openings 64 of the cam disc 61. The inner end of the shaft section 66 is journaled upon and supported by the nose 65, while its outer end within the bore 28 is supported by the end 23. An expansible coil spring 70 surrounds the shaft section 66 between the disc 68 and end 23, and this spring serves to bias the shaft section 66 and disc 68 axially inwardly and toward the cam disc 61.

Mounted upon the outer face of the disc 68 near and slightly inwardly of the periphery of the disc is a rotatable stop including four equidistantly spaced, radial arms or fingers 71, each finger being capable of projecting radially beyond the periphery of the disc 68. Formed integrally with the four-fingered stop is a four-tooth ratchet wheel having equidistantly spaced teeth 72 spaced between the fingers 71 of the stop and being radially shorter than the fingers 71 of the stop. The ratchet wheel having the teeth 72 is arranged upon the outer side of the stop, and the teeth 72 are adapted for engagement with a

spring arm 73 secured to the outer face of the disc 68, as shown. The arrangement is such that the spring arm 73 prevents counterclockwise rotation of the four-fingered stop, as viewed in Figure 7, and when the stop is turned clockwise, the teeth 72 trip over the spring arm 73. The arrangement is such that one of the fingers 71 always projects radially beyond the periphery of the disc 68, and the fingers 71 are long enough so that they project radially beyond the outermost radial point of the cam section 62, Figure 7. Secured to the end 23 above the shaft section 66 and near the top of the casing section 21 is a mounting bracket 74, upon which is mounted a horizontally disposed spring arm or bell clapper 75, having a striking head 76 secured to its innermost end. The bell clapper 75 extends longitudinally of and above the shaft sections 66 and 43, Figure 3, and extends across the peripheries of the discs 61 and 68, as shown. The cam section 62 is adapted to engage below the bell clapper 75 when the disc 61 rotates counterclockwise, Figure 7, to elevate the bell clapper and release it for downward movement at the abrupt end or step 63 so that the striking head 76 may engage a bell 77 secured to the top of the intermediate casing section 21 adjacent to the inner end of the bell clapper and above the clutch heads 39 and 41.

The outer shaft section 66 includes an outer, reduced end extension 78 projecting through the bore 28 and outwardly of the side 23. Rigidly secured to the extension 78 to facilitate turning the shaft section 66 is a knurled knob 79 having a radially projecting pointer 80 secured thereto and disposed adjacent to the outer face of the side 23, Figure 3. The pointer 80 is adapted to coact with a circular scale 81 imprinted or otherwise suitably marked upon the end 23 and surrounding the knob 79 and pointer. The circular scale 81 is graduated with sixteen circumferentially equidistantly spaced marks or graduations 82, designated by consecutively arranged numerals 83, preferably beginning with the numeral 3 and increasing consecutively in one direction about the circular scale, and ending with the numeral 16.

The operation of the bottom margin indicating device is as follows:

On an Underwood standard typewriter, three revolutions of the roller or platen 11 represents approximately fifteen inches of travel of the paper in the typewriter, and the gear reduction between the shaft extension 12 and driven gear 34, through the small gear 33, is 3-to-1, so that one revolution of the shaft section 35 also represents fifteen inches of travel of the paper in the typewriter. Consequently, one revolution of the cam disc 61 likewise represents the same fifteen inches of travel of the paper through the typewriter. Therefore, by changing the relative position of the rotating stop having the fingers 71 with relation to the step 63 of the cam 62, the amount of travel of the paper through the typewriter before the bell 77 rings is regulated.

The bottom margin indicating device is designed so that the bell 77 will ring for indicating a bottom margin one inch from the bottom of the page for sheets of paper ranging from three inches to sixteen inches in length. Accordingly, the numerals 83 of the circular scale 81 range from the numeral 3 at one end of the scale consecutively to the numeral 16 at the opposite end of the scale, each numeral 83 representing a different length of paper. In changing or resetting

the device for indicating the one inch bottom margin for different lengths of paper, the relative locations of the rotary stop having the fingers 71 and the cam step 63 are changed, as previously stated. The typewriter platen or roller 11 should first be turned clockwise until the bell 77 rings. The stop disc dowel pins 69 are then disengaged from the openings 64 by pulling the thumb knob 79 axially outwardly. The thumb knob and pointer 80 are now turned clockwise until the pointer is positioned adjacent to the proper numeral 83 of the scale 81 corresponding to the length of paper in the typewriter. Since the stop having the fingers 71 is carried by the disc 68, it will accordingly be spaced circumferentially from the cam step 63 the desired amount. The pins 69 are now re-engaged within the openings 64, and the knob 79 is now turned counterclockwise to the starting position coresponding to the position of the paper in the typewriter when the top edge of the paper is even with the top of the alignment scale of the carriage. When turning the knob 79 counterclockwise, Figure 7, to the starting position, the finger 71 of the stop projecting beyond the periphery of the disc 68 will contact one side of the bell clapper 75, so that the knob cannot be turned further counterclockwise without great exertion. The typewriter may now be operated in the usual manner, and as the paper is fed upwardly about the roller or paten 11, such platen will turn clockwise, Figure 1, driving the sprocket wheels 29 and 31 clockwise, together with the small drive gear 33. The gear 33 will in turn drive the driven gear 34 counterclockwise, Figure 1, turning the shaft sections 35, 43 and 66 counterclockwise together with the knob 79 and pointer 80. The cam 62 likewise is driven counterclockwise, Figure 7, and eventually passes beneath the bell clapper 75 which rides over the cam 62 and drops off the abrupt step 63 to ring the bell 77, indicating a one-inch margin from the bottom of the page.

The device is capable of indicating a bottom margin at any desired point above the bottom edge of the sheet for the various lengths of paper provided for by the scale 81. For example, when using an 11-inch long sheet of paper, when it is desired to ring the bell 77 four inches above the bottom edge of the paper, the pointer 80 is set adjacent to the designation 8 of the scale 81 and the bell 77 will ring after seven inches of travel of the paper, leaving a four-inch bottom margin. This may be expressed in terms of a simple formula that the length of the paper minus the particular numeral 83 corresponding to such length plus one equals the bottom margin in inches.

When turning the knob 79 counterclockwise to the starting position where the finger 71 contacts the bell clapper 75, as previously stated, the knob will not turn further counterclockwise without considerable exertion. However, when the roller or platen 11 is now turned, due to the leverage through the reduction gears 33 and 34, the stop finger 71 will move past the bell clapper 75 and turn downwardly upon its pivot for passing under the bell clapper. The spring arm 73 will yield to allow this movement. When one finger 71 of the rotating stop thus moves downwardly, the next adjacent finger 71 will assume the position previously occupied by the finger 71 which yielded to pass under the bell clapper. Thus, the next finger 71 will be in the proper radial position for engaging the side of the clapper when the knob is turned to the starting position.

When resetting the pointer 80 after each type-

written page, align the top edge of the new page with the horizontal alignment scale of the typewriter, turn the knob 79 counterclockwise until it contacts the stop. The clutch heads 39 and 41 will automatically disengage to allow the counterclockwise turning of the knob. The clutch disengaging lever 50 need not be used for the resetting. Its use is to allow back turning for erasures.

While I have described the operation of the bottom margin indicating device in connection with the roller or platen of an Underwood standard typewriter, obviously I do not wish to limit the invention to use upon this particular typewriter. The reduction gears 33 and 34 may have their sizes changed for transmitting the proper relative rotation to the shaft section 35 corresponding to the rotation of the roller or platen of any typewriter for causing a sheet of paper to travel for its full length through the typewriter. Likewise, I do not wish to limit the invention to use with the particular scale 81, which provides for the particular lengths of paper indicated. Also, it is desired not to limit the invention to the indication of a one-inch margin at the bottom of the page, since this distance obviously may vary.

It is to be understood that the form of the invention herewith shown and described is to be taken as a preferred example of the same, and that various changes in shape, size and arrangement of parts may be resorted to without departing from the spirit of the invention or scope of the subjoined claims.

Having thus described my invention, I claim:

1. A bottom margin indicating device for a typewriter including a carriage having an end and a rotary platen, comprising a support secured to the end of the carriage and spaced from the platen, a first shaft section rotatably mounted upon the support and extending substantially parallel to the platen, gearing connecting the platen and first shaft section for driving the same, an intermediate shaft section rotatably mounted upon the support in axial alignment with the first shaft section, a cam secured to the intermediate shaft section for rotation therewith, a clutch device connecting the first and intermediate shaft sections so that they may be disengaged for relative rotation, an audible signal device mounted upon the support adjacent to the cam for engagement with the cam when the intermediate shaft section rotates for producing an audible signal, a second rotatable shaft section mounted upon the support in axial alignment with said first and intermediate shaft sections, clutch means connecting the intermediate and second shaft sections so that they may turn together or independently, a stop device secured to the second shaft section and adapted to engage the audible signal device when the second shaft section is turned to a starting position, and a knob secured to the second shaft section to facilitate turning it.

2. A bottom margin indicating device for a typewriter including a carriage having an end and a rotary platen, comprising a support housing secured to the end of the carriage and extending longitudinally beyond such end and spaced from the platen, a drive shaft rotatably mounted within the support housing, a sprocket wheel secured to the drive shaft for rotation therewith, a second sprocket wheel secured to the platen for rotation therewith, a sprocket chain operatively engaging said sprocket wheels so that rotation of the platen is transmitted to the drive shaft, a relatively small reduction gear secured to the drive shaft,

a first shaft section rotatably mounted within the support housing adjacent to the drive shaft and extending longitudinally thereof, a driven gear secured to the first shaft section for rotation therewith and engaging with and driven by the relatively small reduction gear, a first toothed clutch element secured to the first shaft section for rotation therewith, an intermediate shaft section rotatably mounted within the support housing and arranged in longitudinal alignment with the first shaft section, a second axially shiftable clutch element secured to the intermediate shaft section and adapted to engage and disengage the first clutch element, resilient means connected with the intermediate shaft section and engaging the second clutch element for urging it into engagement with the first clutch element, a manually operable lever connected with the support housing and engaging the second clutch element for shifting it away from the first clutch element, a cam disc secured to the intermediate shaft section for rotation therewith and spaced longitudinally of the first and second clutch elements, said cam disc having an abrupt radial step, a bell secured within the support housing and arranged near the intermediate shaft section, a longitudinally extending bell clapper secured within the support housing and spaced radially from the intermediate shaft section and adapted to engage the periphery of the cam disc and to drop from the abrupt step of the cam disc for ringing the bell, a second rotatable shaft section mounted within the support housing and arranged in axial alignment with the first and intermediate shaft sections, a stop disc secured to the second shaft section for rotation therewith and arranged near the cam disc, the cam disc having a plurality of axial openings, dowel pins secured to the stop disc for engagement within the openings of the cam disc, a spring connected with the second shaft section for urging the stop disc toward the cam disc, a rotary stop element secured to the stop disc near its periphery and including radial projections which engage the bell clapper to initially position the second shaft section when it is turned in one direction, the support housing including an end arranged substantially vertically and having a scale imprinted thereon, the second shaft section projecting outwardly beyond the end of the support housing having the scale, and a pointer secured to the second shaft section and disposed outwardly of the end of the support housing having the scale for coaction with the scale for positioning the rotary stop of the stop disc circumferentially of the abrupt step of the cam disc.

3. A bottom margin indicating device for a typewriter including a carriage and a rotary platen, comprising a support housing secured to one end of the carriage and extending longitudinally of the carriage and having an outer end provided with a scale, a first rotary shaft section mounted within the support housing, reduction gearing operatively connecting the platen and first shaft section, a clutch element carried by the first shaft section, an intermediate shaft section rotatably mounted within the support housing and extending longitudinally beyond the first shaft section, an axially shiftable clutch element secured to the intermediate shaft section, a spring connected with the axially shiftable clutch element for urging it into engagement with the clutch element of the first shaft section, a manually-operated lever mounted upon the support housing and connected with the axially-

shiftable clutch element and serving to disengage it from the clutch element of the first shaft element, a cam disc secured to the intermediate shaft section for rotation therewith and having a plurality of openings formed therein, the cam disc including a cam portion having a step, a bell mounted within the support housing near the cam disc, a resilient bell clapper mounted within the support housing adjacent to the bell and extending adjacent to the cam disc for engagement with the cam portion, whereby the bell clapper drops from the step of the cam portion to ring the bell, a second shaft section rotatably mounted upon the support housing and extending longitudinally of the first and intermediate shaft sections, a disc secured to the second shaft section and arranged adjacent to the cam disc, pins carried by the disc of the second shaft section for engaging in the openings of the cam disc for releasably securing the discs together, a spring connected with the second shaft section and engaging the disc of the second shaft section

for urging the pins into the openings of the cam disc, a rotary stop device secured to the disc of the second shaft section and arranged to contact the bell clapper when the second shaft section is turned to a starting location, the second shaft section extending outwardly of the outer end of the support housing, and a pointer secured to the second shaft section for coaction with the scale to facilitate setting the device for indicating the bottom margin for sheets of paper of various lengths.

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